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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/584,267	06/23/2006	Ryoichi Okuyama	KPO-001	5649

32628 7590 01/15/2009

KANESAKA BERNER AND PARTNERS LLP
1700 DIAGONAL RD
SUITE 310
ALEXANDRIA, VA 22314-2848

EXAMINER	
WIESE, NOAH S	

ART UNIT	PAPER NUMBER
1793	

MAIL DATE	DELIVERY MODE
01/15/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/584,267	OKUYAMA ET AL.	
	Examiner	Art Unit	
	NOAH S. WIESE	1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 October 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-23,27,28,32,33,39,40,43,47,52 and 55* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *1 and 5-10* is/are allowed.

6)☒ Claim(s) *2-4,11-23,27,28,32,33,39,40,43,47,52 and 55* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Status of Application

1. Acknowledgement is made of amendments filed 10/23/2008. Upon entering the amendments, the claims 43 and 47 are amended. The claims 1-23, 27, 28, 32, 33, 39, 40, 43, 47, 52 and 55 are pending and presented for the examination.

Claim Objections

2. Claims 2-4 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. As discussed below, the limitations regarding the ways in which it is "possible" to perform the hydrogen generation method of claim 1 do not constitute active steps, and therefore the subject matter of claims 2-4 does not add further limitations to claim 1.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 2-4 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claims do not further limit independent claim 1 because the limitations stating that it is "possible to generate hydrogen-containing

gas..." does not constitute an additional active method step. Therefore, the scope of the claims is not clear under U.S.C. 112.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 11, 13-23, 27-28, 32-33, 39-40, 43, 47, and 52 are rejected under 35 U.S.C. 102(e) as being anticipated by Cropley et al (US 6811905).

Regarding **claim 11**, Cropley et al teaches a methanol fuel cell that can be used in an alternative method to produce hydrogen. The fuel cell comprises a membrane with electrodes on opposing sides, wherein a methanol and water fuel mixture is introduced to one electrode and oxygen is introduced to the opposing electrode. Cropley also teaches a means for supplying an oxidizing agent and fuel containing an organic compound to opposite electrodes. While Cropley does not specify a "means for generating hydrogen containing gas on the fuel electrode to collect the gas", it is not clear from the claim language what this means would actually correspond to physically. That is, it is ambiguous whether this means is a series of reactions or a physical structure or some other means. Because of this, the means-plus-function limitation is not given patentable weight. The hydrogen generating system taught by Cropley et al

meets all of the structural limitations of instant claim 11, and therefore anticipates the claim.

Regarding **claim 13**, Cropley teaches that the apparatus can be used for producing electrical energy, indicating a means for withdrawing electric energy from the cell. In this configuration the electrode receiving the fuel is the anode (see Abstract).

Regarding **claim 14**, Cropley teaches that the hydrogen production method can be performed by providing an electrical current to the cell, indicating a means for providing electric energy from outside (see column 15, lines 29-35). In this configuration the electrode receiving the fuel would function as the cathode.

Regarding **claims 15-17 and 19**, the voltage between the electrodes in a generating system such as is taught by Cropley is drawn to the use of said system and does not relate to the structure of the system. As such, the method of use limitations of claims 15-17 and 19 do not hold patentable weight in the product claims. Therefore, because Cropley teaches a system that is equivalent structurally to that of claims 11 and 14, the dependent claims 15-17 and 19 are also anticipated by the prior art.

Regarding **claims 18, 20-23, and 27-28**, the limitations regarding varying of certain parameters during the use of the hydrogen generating system are process limitations. They therefore do not hold patentable weight in the product claims 18, 20-23, and 27-28. As such, the claims do not further limit claims 11, 13, and 14, and so they are anticipated by Cropley, which teaches a structurally equivalent system.

Regarding **claims 32-33**, the limitations regarding the operation temperature of the system are process limitations. They therefore do not hold patentable weight in the

product claims 32-33. As such, the claims do not further limit claim 11, and so they are anticipated by Cropley, which teaches a structurally equivalent system.

Regarding **claims 39-40**, Cropley teaches that the membrane is a proton conducting solid electrolyte membrane (see claim 1), and preferably, a perfluorosulfonic acid membrane (see column 10, lines 40-43).

Regarding **claim 43**, Cropley teaches that the anode (fuel electrode) comprises a platinum-ruthenium film (see column 4, lines 20-23). The film can be dispersed a support such as carbon (see column 8, lines 57-62).

Regarding **claim 47**, Cropley teaches that the cathode (oxidizing electrode) comprises a platinum film that can be supported on carbon powder (see column 4, lines 24-25 and column 8, lines 57-62).

Regarding **claim 52**, Cropley teaches that liquid fuel (a mixture of organic compound and water) is circulated for cooling of the cell, indicating a means for circulating fuel (see column 11, lines 41-42).

Claim Rejections - 35 USC § 103

7. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

8. Claim 55 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cropley et al (US 6811905) in view of Quang et al (US 4840783).

Regarding **claim 55**, the claim differs from Cropley et al because Cropley does not teach a carbon dioxide absorbing portion for removing carbon dioxide from the produced hydrogen gas. However, it would have been obvious to modify Cropley in

view of Quang et al in order to add such an absorbing portion to the system because Quang teaches a method of producing hydrogen from methanol involving an advantageous carbon dioxide absorbing portion (see claim 18). One of ordinary skill would have been motivated to include such an absorbing portion because doing so would result in a product gas produced by the Cropley system having a higher hydrogen purity. One would have expected reasonable success in the modification because Cropley teaches that hydrogen can be produced from the inventive system and Quang teaches a method for removing carbon dioxide from such produced hydrogen-containing gas. Therefore, claim 55 is obvious and not patentably distinct over the prior art of record.

Allowable Subject Matter

9. Claims 1 and 5-10 are allowed. The following is an examiner's statement of reasons for allowance: The prior art of record, either alone or in combination, fails to anticipate or render obvious the instantly claimed method of producing hydrogen wherein fuel and oxidizing agent are introduced at two electrodes at opposites sides of a membrane, and wherein the hydrogen gas is generated at the fuel electrode (the anode).

Double Patenting

10. Claims 11-23, 27-28, 43, 47, and 55 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-39 of copending Application No. 11/794357. Although the conflicting claims are not identical, they are not patentably distinct from each other because the copending

application's claims are drawn to a hydrogen generation system comprising the same methods and elements as those of instant claims.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Response to Arguments

11. Applicants arguments filed 10/23/2008 have been fully considered and are persuasive at showing that the instantly claimed method of hydrogen generation is patentably distinct over the methods of the previously employed prior art. Therefore, the grounds of rejection for the method claims 1-10 are withdrawn. However, applicant's arguments are not persuasive regarding the product claims because the product claims do not require the same reaction series leading to hydrogen production at the anode as the method claims. Therefore, the claims remain rejected in view of Cropley, and as discussed in detail above.

Conclusion

12. Claims 1 and 5-10 are allowed. Claims 2-5, 11-23, 27-28, 32-33, 39-40, 43, 47, 52, and 55 are rejected.

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Noah S. Wiese whose telephone number is 571-270-3596. The examiner can normally be reached on Monday-Friday, 7:30am-5:00pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo can be reached on 571-272-1233. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Noah Wiese
January 14th, 2009
AU 1793

/Karl E Group/
Primary Examiner, Art Unit 1793